

FIGURE 1.

esoGPCR Genes

Class A				Class A				Class A				Class A				Class B						
Family	Gene	Database ID	Species	Family	Gene	Database ID	Species	Family	Gene	Database ID	Species	Family	Gene	Database ID	Species	Family	Gene	Database ID	Species			
Acetylcholine (muscarinic)	CHRM1	81	H.M.	Histamine	HRH1	87	H.M.	Prostanoid	PTGDR	8172	H.M.	Orphan group A6	*GPR45	8258	H.M.	Parathyroid hormone	PTH1R	8340	H.M.			
	CHRM2	2	H.M.		HRH2	88	H.M.		PTGER1	173	H.M.		*GPR53	259	H.M.		PTH2R	341	H.M.			
	CHRM3	3	H.M.		HRH3	89	H.M.		PTGER2	174	H.M.		*GPR4	260	H.M.		Secretin	SCTR	342	H.M.		
	CHRM4	4	H.M.		HRH4	90	H.M.		PTGER3	175	H.M.		*GPR1	261	H.M.		ZACAP	ADCTAP1R1	343	H.M.		
	CHRM5	5	H.M.		Hormone protein	FSHR	91		H.M.	PTGER4	176		H.M.	Orphan group A8	*GPR11		262	H.M.	Vasopressin	VPR1	344	H.M.
Adenosine	ADORA1	6	H.M.	UHGCR		92	H.M.	PTGFR	177	H.M.	*GPR11	263	H.M.		Orphan group A9	*GPR12	264	H.M.	Brain-specific angiogenesis inhibitor	*BAI1	345	H.M.
	ADORA2A	7	H.M.	TSR1		93	H.M.	PTGIR	178	H.M.	*GPR13	265	H.M.			*BAI2	346	H.M.		*BAI2	347	H.M.
	ADORA2B	8	H.M.	GPR54		94	H.M.	PTGIR2	179	H.M.	Orphan group A10	*GPR14	266	H.M.		*BAI3	348	H.M.		*BAI3	349	H.M.
	ADORA3	9	H.M.	LTBR		95	H.M.	PTGIR3	180	H.M.		*GPR15	267	H.M.	Orphan group A11	*GPR16	268	H.M.		EGF-like, mucin-like receptor (EMR)	*EMR1	350
	ADP/UDP-glucose	PRY112	105	H.M.	KISS-1 leukotriene	LTBR2	96	H.M.	PTGIR4	181		H.M.	*GPR16	269		H.M.	*GPR17	270		H.M.	*EMR2	351
GPR36		12	H.M.	MRG11		97	H.	P2RY12	180	H.M.		*GPR17	271	H.M.	*GPR18	271	H.M.	*GPR18		352	H.M.	
*GPR87		13	H.M.	MRG12		98	H.	P2RY12	181	H.M.	*GPR18	272	H.M.	Other Orphan Genes	*GPR19	272	H.M.	Lactophilin	*LEC1	353	H.M.	
ADRA1A		14	H.M.	MRG13		99	H.	P2RY12	182	H.M.	*GPR19	273	H.M.		*GPR20	273	H.M.		*LEC2	354	H.M.	
ADRA1B		15	H.M.	MRG14		100	H.	P2RY12	183	H.M.	*GPR20	274	H.M.		*GPR21	274	H.M.		*LEC3	355	H.M.	
ADRA1D	16	H.M.	MRG15	101		H.	LGR7	183	H.M.	*GPR21	275	H.M.	*GPR22		275	H.M.	Proto-cadherin	*CELSR1	356	H.M.		
ADRA2A	17	H.M.	*Ang1	102	M.	LGR8	184	H.M.	*GPR22	276	H.M.	*GPR23	276		H.M.	*CELSR2		357	H.M.			
ADRA2B	18	H.M.	*Ang2	103	M.	RGR	185	H.M.	*GPR23	277	H.M.	*GPR24	277	H.M.	*CELSR3	358		H.M.				
ADRA2C	19	H.M.	*Ang3	104	M.	HTR1A	186	H.M.	*GPR24	278	H.M.	*GPR25	278	H.M.	Orphan group B1	*GPR26		278	H.M.			
ADRA2D	20	H.M.	*Ang4	105	M.	HTR1B	187	H.M.	*GPR25	279	H.M.	*GPR26	279	H.M.		*GPR27		279	H.M.			
ADRB1	21	H.M.	*Ang5	106	M.	HTR1C	188	H.M.	*GPR26	280	H.M.	*GPR27	280	H.M.		*GPR28		280	H.M.			
ADRB2	22	H.M.	*Ang6	107	M.	HTR1D	189	H.M.	*GPR27	281	H.M.	*GPR28	281	H.M.		Orphan group B2	*GPR29	281	H.M.			
ADRB3	23	H.M.	*Ang7	108	M.	HTR1E	190	H.M.	*GPR28	282	H.M.	*GPR29	282	H.M.	*GPR30		282	H.M.				
ADRB4	24	H.M.	*Ang8	109	M.	HTR1F	191	H.M.	*GPR29	283	H.M.	*GPR30	283	H.M.	*GPR31		283	H.M.				
ADRB5	25	H.M.	*Ang9	110	M.	HTR1G	192	H.M.	*GPR30	284	H.M.	*GPR31	284	H.M.	*GPR32		284	H.M.				
Adrenomedullin	ADM1	23	H.M.	*Ang10	111	M.	HTR1H	193	H.M.	*GPR31	285	H.M.	*GPR32	285	H.M.	Orphan group B3	*GPR33	285	H.M.			
Anaphylatoxin	CSAR1	24	H.M.	*Ang11	112	M.	HTR1I	194	H.M.	*GPR33	286	H.M.	*GPR34	286	H.M.		*GPR34	286	H.M.			
Angiotensin	AGTR1	27	H.M.	*Ang12	113	M.	HTR1J	195	H.M.	*GPR34	287	H.M.	*GPR35	287	H.M.		*GPR35	287	H.M.			
Angiotensin	AGTR2	28	H.M.	*Ang13	114	M.	HTR1K	196	H.M.	*GPR35	288	H.M.	*GPR36	288	H.M.		*GPR36	288	H.M.			
Angiotensin	AGTR3	29	H.M.	*Ang14	115	M.	HTR1L	197	H.M.	*GPR36	289	H.M.	*GPR37	289	H.M.	Other Orphan Genes	*ETL	370	H.M.			
Angiotensin	AGTR4	30	H.M.	*Ang15	116	M.	HTR1M	198	H.M.	*GPR37	290	H.M.	*GPR38	290	H.M.		*FL14454	371	H.M.			
Angiotensin	AGTR5	31	H.M.	*Ang16	117	M.	HTR1N	199	H.M.	*GPR38	291	H.M.	*GPR39	291	H.M.		*GPR39	372	H.M.			
Angiotensin	AGTR6	32	H.M.	*Ang17	118	M.	HTR1O	200	H.M.	*GPR39	292	H.M.	*GPR40	292	H.M.		*GPR40	373	H.M.			
Angiotensin	AGTR7	33	H.M.	*Ang18	119	M.	HTR1P	201	H.M.	*GPR40	293	H.M.	*GPR41	293	H.M.	*GPR41	374	H.M.				
Angiotensin	AGTR8	34	H.M.	*Ang19	120	M.	HTR1Q	202	H.M.	*GPR41	294	H.M.	*GPR42	294	H.M.	*GPR42	375	H.M.				
Angiotensin	AGTR9	35	H.M.	*Ang20	121	M.	HTR1R	203	H.M.	*GPR42	295	H.M.	*GPR43	295	H.M.	*GPR43	376	H.M.				
Angiotensin	AGTR10	36	H.M.	*Ang21	122	M.	HTR1S	204	H.M.	*GPR43	296	H.M.	*GPR44	296	H.M.	*GPR44	377	H.M.				
Angiotensin	AGTR11	37	H.M.	*Ang22	123	M.	HTR1T	205	H.M.	*GPR44	297	H.M.	*GPR45	297	H.M.	*GPR45	378	H.M.				
Angiotensin	AGTR12	38	H.M.	*Ang23	124	M.	HTR1U	206	H.M.	*GPR45	298	H.M.	*GPR46	298	H.M.	*GPR46	379	H.M.				
Angiotensin	AGTR13	39	H.M.	*Ang24	125	M.	HTR1V	207	H.M.	*GPR46	299	H.M.	*GPR47	299	H.M.	*GPR47	380	H.M.				
Angiotensin	AGTR14	40	H.M.	*Ang25	126	M.	HTR1W	208	H.M.	*GPR47	300	H.M.	*GPR48	300	H.M.	*GPR48	381	H.M.				
Angiotensin	AGTR15	41	H.M.	*Ang26	127	M.	HTR1X	209	H.M.	*GPR48	301	H.M.	*GPR49	301	H.M.	*GPR49	382	H.M.				
Angiotensin	AGTR16	42	H.M.	*Ang27	128	M.	HTR1Y	210	H.M.	*GPR49	302	H.M.	*GPR50	302	H.M.	*GPR50	383	H.M.				
Angiotensin	AGTR17	43	H.M.	*Ang28	129	M.	HTR1Z	211	H.M.	*GPR50	303	H.M.	*GPR51	303	H.M.	*GPR51	384	H.M.				
Angiotensin	AGTR18	44	H.M.	*Ang29	130	M.	HTR1AA	212	H.M.	*GPR51	304	H.M.	*GPR52	304	H.M.	*GPR52	385	H.M.				
Angiotensin	AGTR19	45	H.M.	*Ang30	131	M.	HTR1AB	213	H.M.	*GPR52	305	H.M.	*GPR53	305	H.M.	*GPR53	386	H.M.				
Angiotensin	AGTR20	46	H.M.	*Ang31	132	M.	HTR1AC	214	H.M.	*GPR53	306	H.M.	*GPR54	306	H.M.	*GPR54	387	H.M.				
Angiotensin	AGTR21	47	H.M.	*Ang32	133	M.	HTR1AD	215	H.M.	*GPR54	307	H.M.	*GPR55	307	H.M.	*GPR55	388	H.M.				
Angiotensin	AGTR22	48	H.M.	*Ang33	134	M.	HTR1AE	216	H.M.	*GPR55	308	H.M.	*GPR56	308	H.M.	*GPR56	389	H.M.				
Angiotensin	AGTR23	49	H.M.	*Ang34	135	M.	HTR1AF	217	H.M.	*GPR56	309	H.M.	*GPR57	309	H.M.	*GPR57	390	H.M.				
Angiotensin	AGTR24	50	H.M.	*Ang35	136	M.	HTR1AG	218	H.M.	*GPR57	310	H.M.	*GPR58	310	H.M.	*GPR58	391	H.M.				
Angiotensin	AGTR25	51	H.M.	*Ang36	137	M.	HTR1AH	219	H.M.	*GPR58	311	H.M.	*GPR59	311	H.M.	*GPR59	392	H.M.				
Angiotensin	AGTR26	52	H.M.	*Ang37	138	M.	HTR1AI	220	H.M.	*GPR59	312	H.M.	*GPR60	312	H.M.	*GPR60	393	H.M.				
Angiotensin	AGTR27	53	H.M.	*Ang38	139	M.	HTR1AJ	221	H.M.	*GPR60	313	H.M.	*GPR61	313	H.M.	*GPR61	394	H.M.				
Angiotensin	AGTR28	54	H.M.	*Ang39	140	M.	HTR1AK	222	H.M.	*GPR61	314	H.M.	*GPR62	314	H.M.	*GPR62	395	H.M.				
Angiotensin	AGTR29	55	H.M.	*Ang40	141	M.	HTR1AL	223	H.M.	*GPR62	315	H.M.	*GPR63	315	H.M.	*GPR63	396	H.M.				
Angiotensin	AGTR30	56	H.M.	*Ang41	142	M.	HTR1AM	224	H.M.	*GPR63	316	H.M.	*GPR64	316	H.M.	*GPR64	397	H.M.				
Angiotensin	AGTR31	57	H.M.	*Ang42	143	M.	HTR1AN	225	H.M.	*GPR64	317	H.M.	*GPR65	317	H.M.	*GPR65	398	H.M.				
Angiotensin	AGTR32	58	H.M.	*Ang43	144	M.	HTR1AO	226	H.M.	*GPR65	318	H.M.	*GPR66	318	H.M.	*GPR66	399	H.M.				
Angiotensin	AGTR33	59	H.M.	*Ang44	145	M.	HTR1AP	227	H.M.	*GPR66	319	H.M.	*GPR67	319	H.M.	*GPR67	400	H.M.				
Angiotensin	AGTR34	60	H.M.	*Ang45	146	M.	HTR1AQ	228	H.M.	*GPR67	320	H.M.	*GPR68	320	H.M.	*GPR68	401	H.M.				
Angiotensin	AGTR35	61	H.M.	*Ang46	147	M.	HTR1AR	229	H.M.	*GPR68	321	H.M.	*GPR69	321	H.M.	*GPR69	402	H.M.				
Angiotensin	AGTR36	62	H.M.	*Ang47	148	M.	HTR1AS	230	H.M.	*GPR69	322	H.M.	*GPR70	322	H.M.	*GPR70	403	H.M.				
Angiotensin	AGTR37	63	H.M.	*Ang48	149	M.	HTR1AT	231	H.M.	*GPR70	323	H.M.	*GPR71	323	H.M.	*GPR71	404	H.M.				
Angiotensin	AGTR38	64	H.M.	*Ang49	150	M.	HTR1AU	232	H.M.	*GPR71	324	H.M.	*GPR72	324	H.M.	*GPR72	405	H.M.				
Angiotensin	AGTR39	65	H.M.	*Ang50	151	M.	HTR1AV	233	H.M.	*GPR72	325	H.M.	*GPR73	325	H.M.	*GPR73	406	H.M.				
Angiotensin	AGTR40	66	H.M.	*Ang51	152	M.	HTR1AW	234	H.M.	*GPR73	326	H.M.	*GPR74	326	H.M.	*GPR74	407	H.M.				
Angiotensin	AGTR41	67	H.M.	*Ang52	153	M.	HTR1AX	235	H.M.	*GPR74	327	H.M.	*GPR75	327	H.M.	*GPR75	408	H.M.				
Angiotensin	AGTR42	68	H.M.	*Ang53	154	M.	HTR1AY	236	H.M.	*GPR75	328	H.M.	*GPR76	328	H.M.	*GPR76	409	H.M.				
Angiotensin	AGTR43	69	H.M.	*Ang54	155	M.	HTR1AZ	237	H.M.	*GPR76	329	H.M.	*GPR77	329	H.M.	*GPR77	410	H.M.				
Angiotensin	AGTR44	70	H.M.	*Ang55	156	M.	HTR1BA	238	H.M.	*GPR77	330	H.M.	*GPR78	330	H.M.	*GPR78	411	H.M.				
Angiotensin	AGTR45	71	H.M.	*Ang56	157	M.	HTR1BB	239	H.M.	*GPR78	331	H.M.	*GPR79	331	H.M.	*GPR79	412	H.M.				
Angiotensin	AGTR46	72	H.M.	*Ang57	158	M.	HTR1BC	240	H.M.	*GPR79	332	H.M.	*GPR80	332	H.M.	*GPR80	413	H.M.				
Angiotensin	AGTR47	73	H.M.	*Ang58	159	M.	HTR1BD	241	H.M.	*GPR80	333	H.M.	*GPR81	333	H.M.	*GPR81	414	H.M.				
Angiotensin	AGTR48	74	H.M.	*Ang59	160	M.	HTR1BE	242	H.M.	*GPR81	334	H.M.	*GPR82	334	H.M.	*GPR82	415	H.M.				
Angiotensin	AGTR49	75	H.M.	*Ang60	161	M.	HTR1BF	243	H.M.	*GPR82	335	H.M.	*GPR83	335	H.M.	*GPR83	416	H.M.				
Angiotensin	AGTR50	76	H.M.	*Ang61	162	M.	HTR1BG	244	H.M.	*GPR83	336	H.M.	*GPR84	336	H.M.	*GPR84	417	H.M.				
Angiotensin	AGTR51	77	H.M.	*Ang62	163	M.	HTR1BH	245	H.M.	*GPR84	337	H.M.	*GPR85	337	H.M.	*GPR85	418	H.M.				
Angiotensin	AGTR52	78	H.M.	*Ang63	164	M.	HTR1BI	246	H.M.	*GPR85	338	H.M.	*GPR86	338	H.M.	*GPR86	419	H.M.				
Angiotensin	AGTR53	79	H.M.	*Ang64	165	M.	HTR1BJ	247	H.M.	*GPR86	339	H.M.	*GPR87	339	H.M.	*GPR87	420	H.M.				
Angiotensin	AGTR54	80	H.M.	*Ang65	166	M.	HTR1BK	248	H.M.	*GPR87	340	H.M.	*GPR88	340	H.M.	*GPR88	421	H.M.				
Angiotensin	AGTR55	81	H.M.	*Ang66	167	M.	HTR1BL	249	H.M.	*GPR88	341	H.M.	*GPR89	341	H.M.	*GPR89	422	H.M.				
Angiotensin	AGTR56	82	H.M.	*Ang67	168	M.	HTR1BM	250	H.M.	*GPR89	342	H.M.	*GPR90	342	H.M.	*GPR90	423	H.M.				
Angiotensin	AGTR57	83	H.M.	*Ang68	169	M.	HTR1BN	251	H.M.	*GPR90	343	H.M.	*GPR91	343	H.M.	*GPR91	424	H.M.				
Angiotensin	AGTR58	84	H.M.	*Ang69	170	M.	HTR1BO	252														

FIGURE 2

10/527 265
PCT/US03/22226

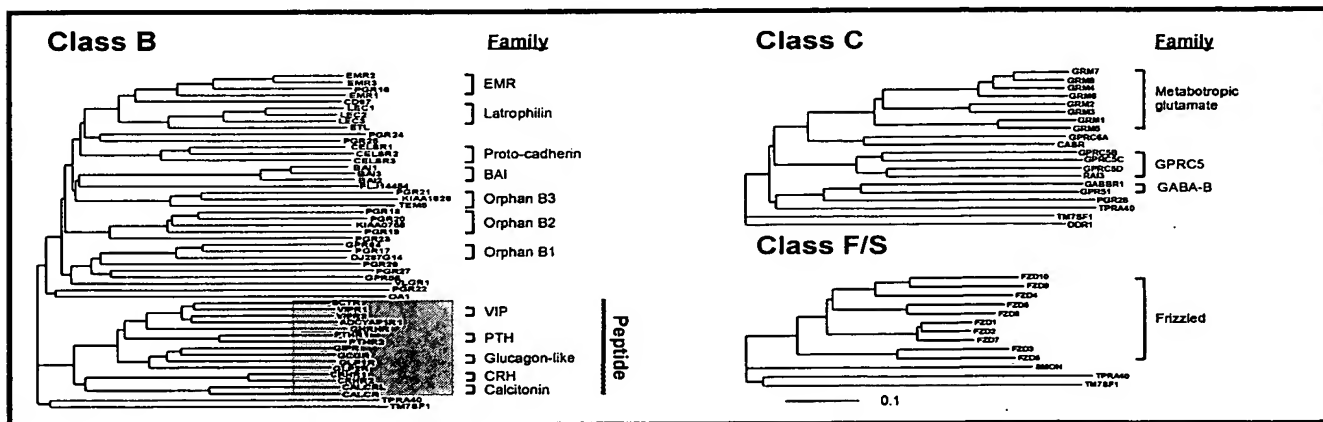
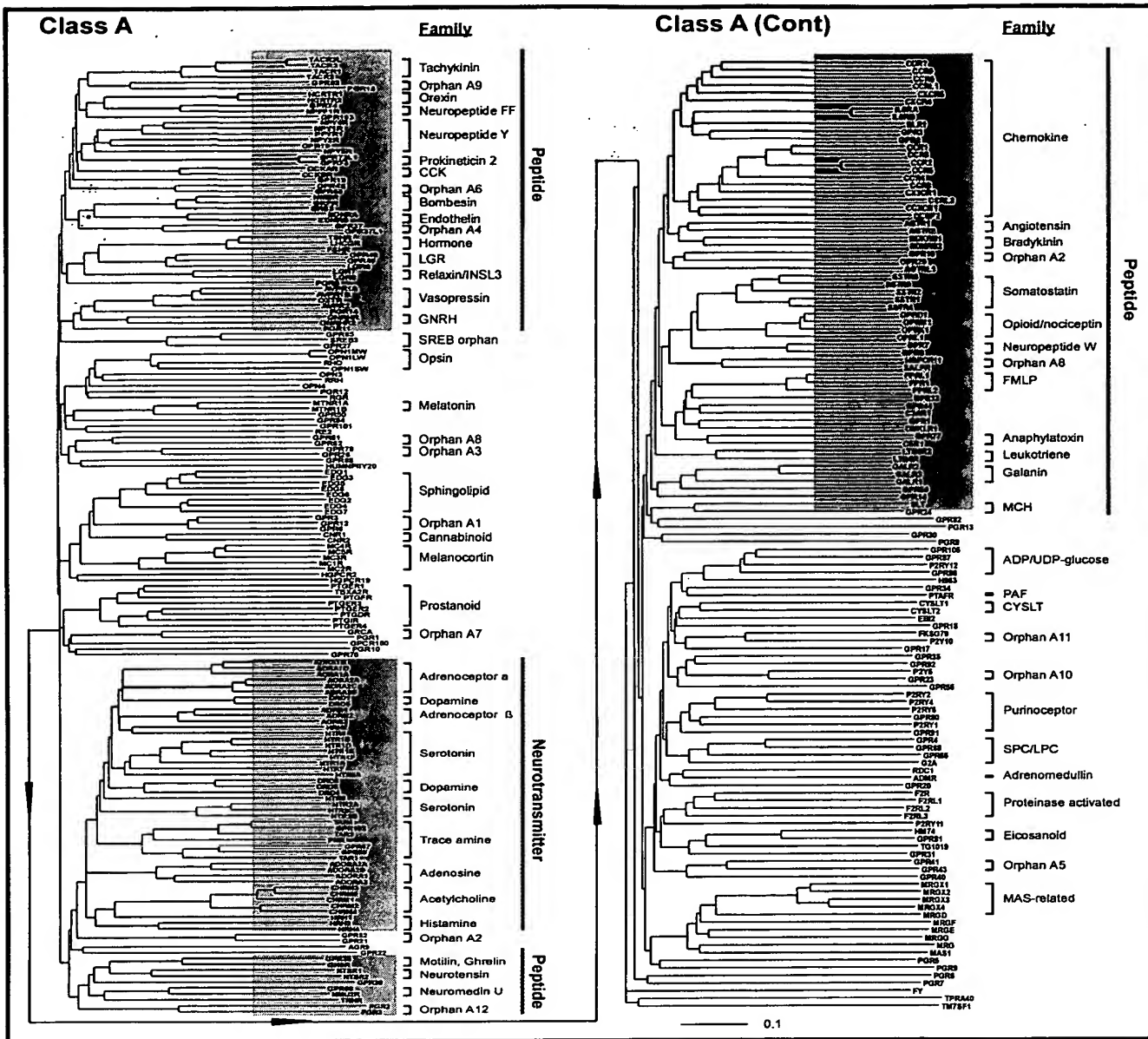


FIGURE 3.

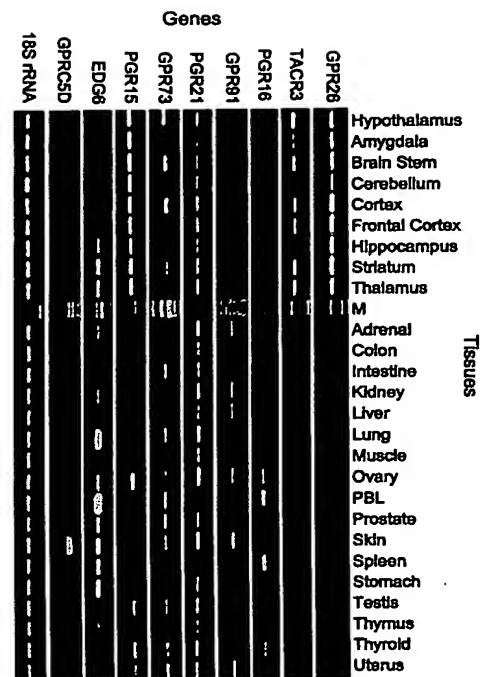


FIGURE 4.

Tissues	Genes
Hypothalamus	MRGG
Amygdala	GPR91
BrainStem	GPRC5D
Cerebellum	HM74
Cortex	CYSLT2
FrontalCortex	PGR17
Hippocampus	GPR9
Sutium	IL8RA
Thalamus	CCR3
Adrenal	P2Y10
Colon	PGR27
Intestine	AGTRL1
Kidney	EDG8
Liver	GPR101
Lung	GPR88
Muscle	GPR83
Ovary	GALR2
PBL	PGR8
Prostate	TACR3
Skin	BAI1
Spleen	NTSR1
Stomach	GPR85
Testis	GPR12
Thymus	HRH3
Thyroid	GPR37L1
Uterus	GPR26
	HTR7
	HTR1F
	GPR17
	GPR77
	GPR75
	GPR83
	HTR2A
	PGR7
	CELSR2
	CELSR3
	GPR86
	GRCA
	PGR19
	PGR15
	HTR4
	GPR37
	RE2
	LEC3
	LEC1
	LEC2
	P2RY12
	GPR19
	EDG8
	GPR23
	GPRC5B
	HTR1D
	TRHR2
	GPR4
	TM7SF3
	PGR23
	GPR105
	CD07
	CMKLR1
	KIAA0758
	PGR22
	TM7SF1
	GPR22
	TPRA40
	P2Y5
	RDC1
	GPR73
	GPR80
	CCBP2
	P2RY6
	CCRL1
	GPR48
	GPR21
	MRGF
	GPR43
	H083
	GPR92
	CYSLT1
	ETL
	TEM5
	GPR82
	CXCR6
	GPR18
	GPR84
	VIPR2
	GPR66
	GPR55
	EMR1
	GPRC5C
	FKSG79
	HGPCR11
	PGR29
	LGR6
	PTGDR
	GPR31
	FPR-RS2
	GPR35
	PGR10
	HCRTR1
	SSTR3

1

2

3

FIGURE 5.

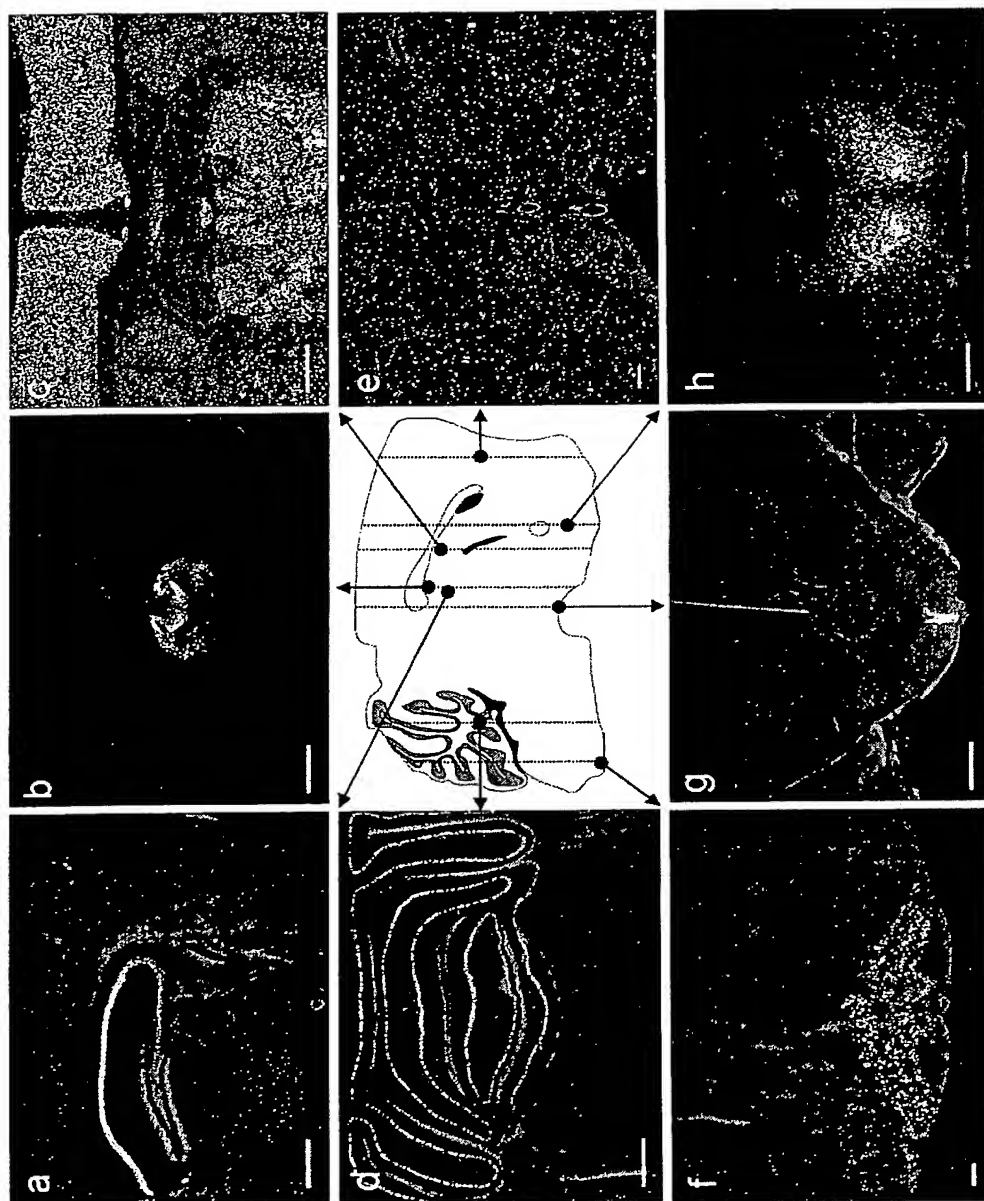


FIGURE 6A.

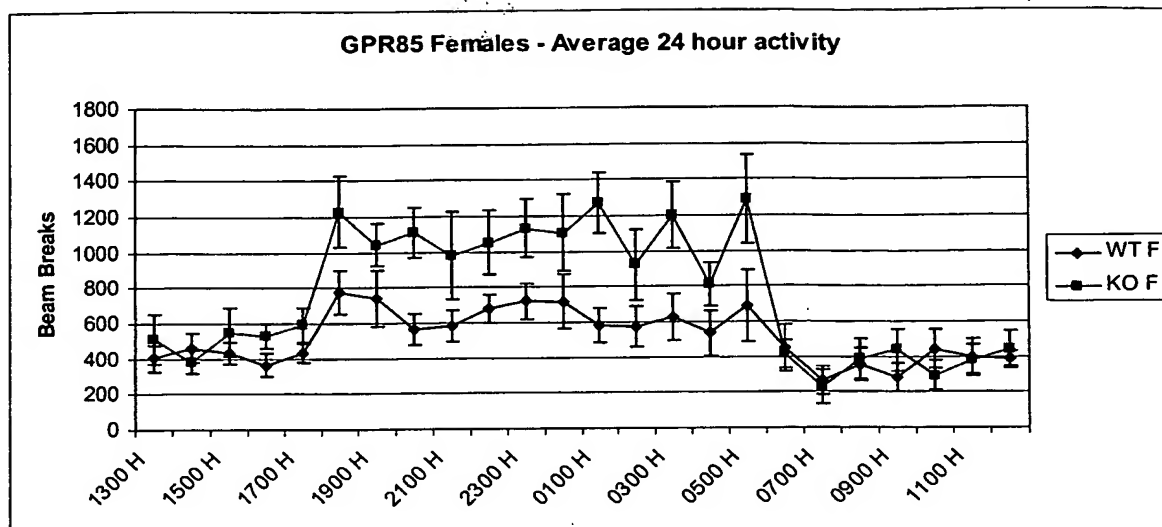


FIGURE 6B.

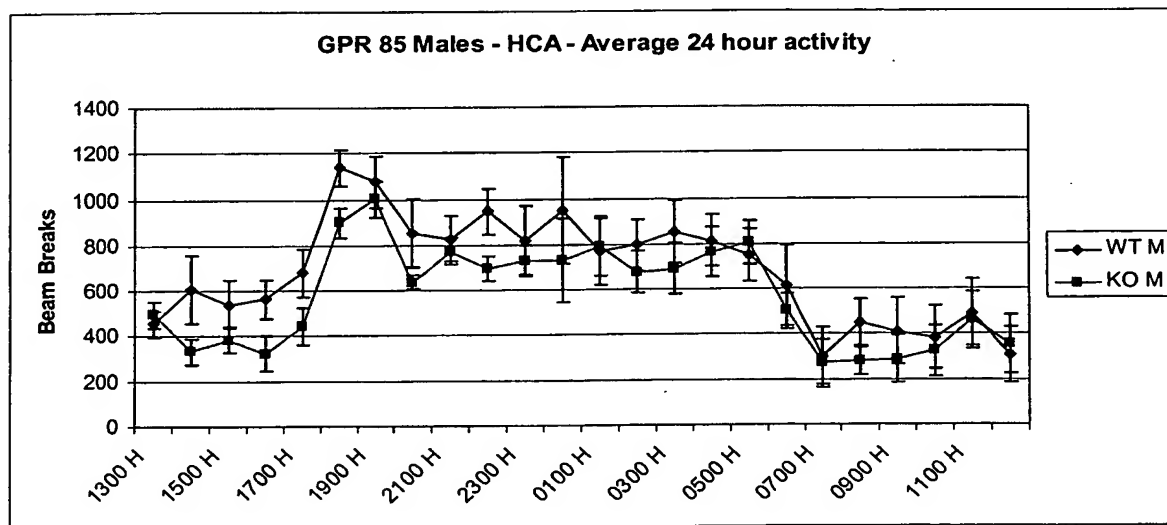


FIGURE 7A.

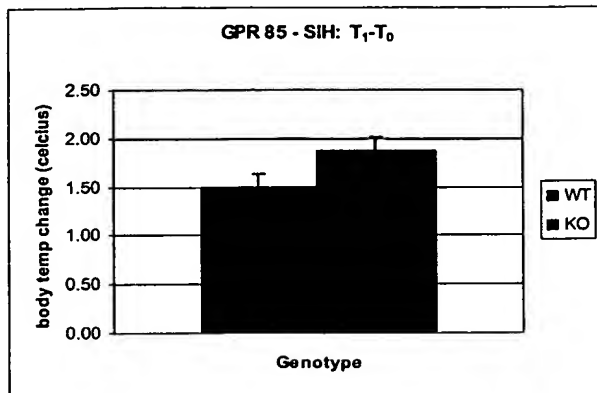


FIGURE 7B.

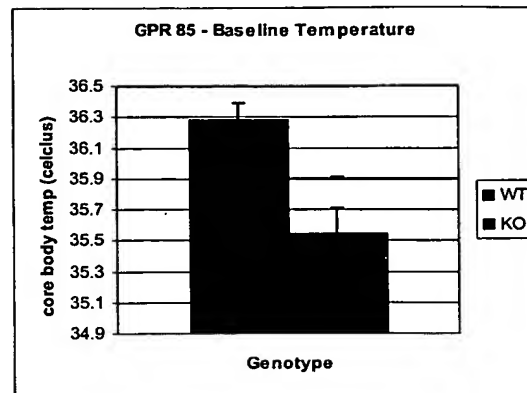


FIGURE 8.

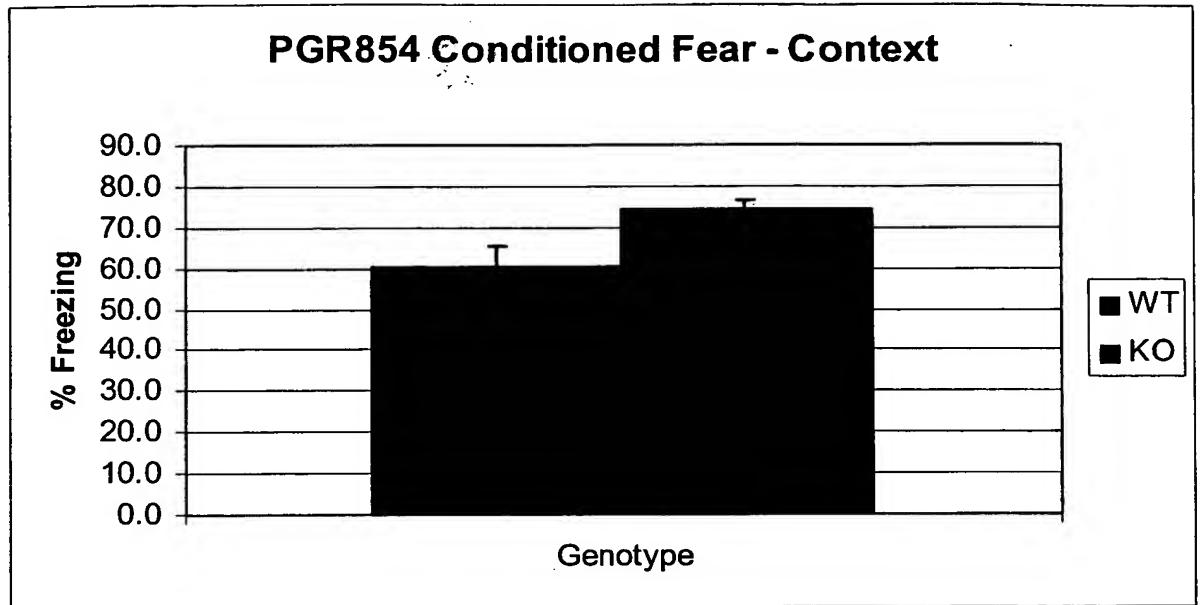


FIGURE 9A.

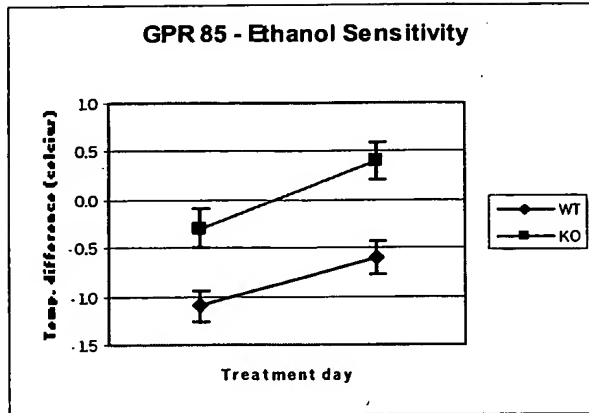
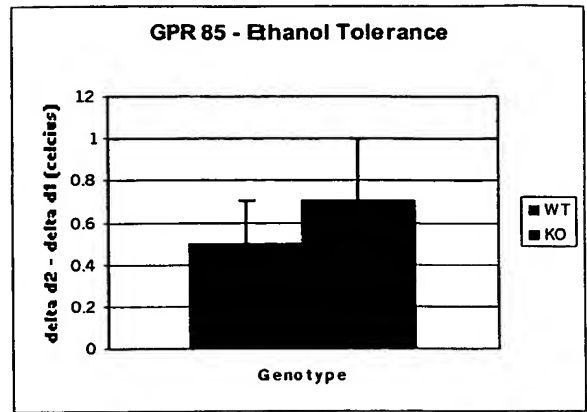


FIGURE 9B.



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☒ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.